Health cognitions mediate physical (in)activity and walking in midlife women

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Abstract

This study sought to identify which of the many facilitators and barriers to physical activity (PA) and walking are most significant to changing midlife women's exercise behaviour with a view to informing future interventions. A cross-sectional survey explored associations of PA and sedentary time with self-reported health value, health locus of control (HLOC) and physical and mental health. Open-ended questions were included to elicit barriers and facilitators to walking. A sample of 295 women, aged 35-55, were recruited via women's groups, social media, online forums, and posters in doctors' surgeries, and completed the survey online. Quantitative data were analysed using descriptive statistics, t-test, analysis of variance and regression analyses. The low activity levels reported underline the urgency of developing interventions for this population. Results suggest that the key factors associated with higher activity levels are having a more internal HLOC, better mental health and placing greater value on health. While health cognitions may therefore be one important factor to target, these must be tackled in the context of women's other barriers and facilitators to exercise. Thematic analysis of the open-ended questions revealed that the key barrier to walking was women's busy lives and their many competing priorities and that the most important facilitators were mental health and social connection. Overall, results suggest that rather than emphasizing physical health and activity targets, practitioners should seek to make walking more relevant to women by emphasizing mental wellbeing and self-care, and more enjoyable by focusing on social and family-based walking interventions.

Keywords: physical activity, sedentary time, walking, midlife women, barriers, facilitators

Author Contributions

Ms Anne Marie Walsh

I declare that I contributed to the design of the study, recruitment, data collection, data analysis, wrote the paper and saw and approved the final version.

Dr Ellen, E. A. Simpson

I declare that I contributed to the design of the study, analysis of the results, write up and review of the paper and approved the final version.

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Conflict of interest

The authors declare that they have no conflict of interest

Ethical approval

Ethical approval for the study was obtained through the Staff and Postgraduate Filter Committee.

Data statement

The data is not available at this time as it is confidential and we do not have permission to share it.

1 Introduction

Physical inactivity is a leading risk factor for poor health and mortality, posing a major worldwide economic burden [1]. Increasing physical activity (PA) has therefore been described as the 'best buy in public health' [2]. This is particularly true of Ireland, where an alarming two-thirds of adults are insufficiently active [3]. Midlife women are particularly at risk - not only is female participation significantly lower than male [3], but regular exercise declines for many, just when menopause-related physiological changes increase their risk of

weight gain and chronic disease [4]. Recent research suggests their sedentary time is also increasing, compounding their risk [5] - daily leisure-time sitting of over 6 versus less than 3 hours has been linked to ~40% higher all-cause death rate, independent of PA [6]. To increase the odds of healthy ageing in this population, research is urgently needed to expand the limited evidence base on key factors to target in developing effective interventions which simultaneously target increased activity and reduced sitting across the menopausal transition [7].

Walking may be one of the most effective interventions, as it is one of the best low-cost, easily implemented, moderate-intensity activities for maintaining a healthy weight [8], while also offering potential for decreasing sedentary time [9]. The development of a National Activity Plan and nationwide organisations such as Get Ireland Walking offer promise, but their effectiveness relies on initiatives aligning with women's key barriers and facilitators, making an in-depth understanding of these factors vital.

Health cognitions are one potential source of influence to target, with evidence that feeling in control of one's health, or having an internal health locus of control (HLOC), placing greater value on health and perceiving one's current physical and mental health status more positively are all associated with higher levels of health-protective behaviours [10]. Those with internal HLOC are also likely to derive more enjoyment from health-related activities [10]. Although initially considered a stable trait, HLOC would appear to be open to influence by experience [11], and thus a potential target for intervention.

However, health cognitions are only one factor influencing women's exercise behaviour - past research suggests that barriers can be significant, in particular women's perceived lack of time [12,13]. Other factors include health issues, poor motivation, absent social support [4], and environmental factors such as poor weather, lack of facilities and safety concerns [14,15]. Facilitators, in contrast, include the associated health benefits, greater wellbeing, reduced stress, enjoyment, social support, and accountability to others [12,14,16]. Amongst these factors, experiential benefits emerge as far stronger predictors of PA than physical health reasons [17].

In relation to walking, the few existing studies generally reflect these findings. Lack of time is the primary barrier [17,18], with Segar et al. [17] linking this to women's caring responsibilities, which relegate walking to low daily priority. While walking for transport was an important facilitator for some [17,18], again experiential rather than health benefits emerged as the key facilitators. For example, Darker et al. [18]'s participants were motivated more by immediate reasons of enjoyment than by longer-term health benefits. More recent research supports this, highlighting the social aspect of making friends as the primary motivation for participating in health walks [19]. Research with low-income urban mothers also identifies social connection as their most powerful facilitator, alongside "me time", and the opportunity to gain a brief respite from their responsibilities [17]. This suggests that the functional, social and therapeutic advantages rather than the health benefits of walking may be key to increasing participation.

The overall aim of this study was to identify which of the many facilitators and barriers to PA and walking are most significant to changing midlife Irish women's exercise behaviour to inform the development of effective interventions. Because health cognitions have been linked to health-promoting behaviours, the study started by exploring their

relationship with PA and sedentary time. As walking offers promise in tackling inactivity in this population, thematic analysis was then used to explore which factors promote/impede walking in active and less-active women.

2 Method

2.1 Study Design

The study was a cross-sectional mixed method survey design. The quantitative component explored the association of PA and sedentary time with self-reported health value, HLOC and physical/mental health, while qualitative analysis was used to gain an understanding of barriers/facilitators to walking.

2.2 Study Sample and Procedures

Women resident in the Republic of Ireland, aged 35-55 years, were recruited through community groups and organisations, posters in doctors' surgeries and online, via Facebook/Twitter and parenting/knitting forums. The number of participants required was estimated using Tabachnick and Fidell's [20] formulation N ≥150+8m (where m is the number of independent variables) which suggested that a minimum sample of ≥130 participants should be recruited. After giving informed consent, participants completed and submitted the anonymous survey online, with the responses then available for analysis in Qualtrics. A debriefing sheet was provided on survey completion.

2.3 Measures

A customised questionnaire comprised demographic questions, four questionnaires in their original format, outlined below, and five open-ended questions eliciting advantages/disadvantages and barriers/facilitators to walking.

2.3.1 ***Self-perceived Physical and Mental Health***.

The 12-item SF-12 scale [21] assessed participants' physical and mental health. It is an effective, brief but broad-ranging instrument with high reliability and validity.

2.3.2 ***Health locus of control***.

The 18-item Multidimensional Health Locus of Control Scale [22] measured HLOC. It assesses beliefs about the factors which influence health along three independent dimensions - internal factors (own choices/behaviours), chance (luck/fate) and powerful others (e.g. doctor).

2.3.3 ***Health value.***

The 4-item Health as a Value scale measured the value participants place on health [23].

2.3.4 ***Physical activity and sedentary time.***

The revised International Physical Activity Questionnaire (IPAQ; [24]) assessed PA and sedentary time. Although self-report measures may lead to over-reporting, they remain one of the most effective, low-cost ways of gathering data from a large sample. The IPAQ was selected because it is a standardized instrument with widely tested predictive validity and reliability. It elicits minutes spent in moderate/vigorous/walking activity over the previous 7 days, in relation to work, transportation, home and leisure activities, and assesses sedentary time.

2.4 Analyses

2.4.1 Statistical Analyses.

Statistical analyses were performed using SPSS v23, all variables were checked for normality, with skewness and kurtosis falling within -2 and 2, and >10, respectively, within normal range. High levels of household activity were reported (mean 645.4 minutes/week), with over 50% meeting IPAQ guidelines independent of other activity. Because the health benefits of even vigorous housework have been questioned [15], as per Bermudez et al. [25], for PA, participants were divided by volume of leisure activity reported. Descriptive statistics, independent t-tests, one-way ANOVAs and hierarchical regression analyses were computed to explore the relationship between health cognitions and both PA and sedentary time, and to determine the factors most predictive of physical health and participants' activity level.

2.4.2 Thematic analysis.

The open-ended questions were subjected to thematic analysis [26]. After detailed and repeated reading of participant responses, initial codes were produced to identify pertinent issues which were grouped into sub-themes and broader themes. Participant responses were reviewed to ensure that this set of themes captured the most important elements of the data, and quotations were selected to illustrate these issues.

3 Results

3.1 Sample description

295 women (M_{age}:43.91, SD:5.64) completed the survey. The majority were married/cohabiting (85.7%), with children (85.4%), university-educated (82%), and in full-/part-time employment (80.3%). Overall, leisure activity levels were low. See Table 1 for BMI and activity data.

3.2 Differences in Physical activity level on health and health cognitions

Independent t-tests explored differences in health cognitions across high/low leisure-time PA. Findings (Table 2) show that higher PA was associated with higher physical/mental health and health value, and a weaker belief that health can be attributed to powerful others.

3.3 Differences in Sitting time on health and health cognitions

One-way ANOVAs assessed differences in health cognitions across low/moderate/high sedentary time. Outcomes (Table 3) show a statistically significant difference only in MHLC Internal, with a Bonferroni adjustment indicating the low sedentary group as significantly more likely than the high group to perceive themselves as in control of their health. The moderate group did not differ significantly from either group.

3.4 Predictors of physical health (PH)

A hierarchical linear regression analysis explored the extent to which health cognitions, sedentary time and PA predict physical health (Table 4). In step one of the model, sociodemographic variables predicted 8.7% of the variance in PH. A significant change in R^2 occurred with the addition of health cognitions (step 2), which accounted for an additional 4.4% of the variance, but not for sedentary time (step 3), or PA (step 4). The final model explained 14.6% of the variance in physical health, with BMI (spc^2 = 0.046) and education (spc^2 = 0.016), as the main predictors, and MHLC Powerful Others (spc^2 = 0.0145) and Chance (spc^2 = 0.013) approaching significance. Results suggest that as BMI (β = -0.225 $p < 0.001$), and MHLC Powerful Others (β = - 0.121, p = 0.051) and Chance (β = -0.126, p =.057) increase, physical health is likely to decline, and that a postgraduate (β = -0.139, p = 0.03) versus a university/post-primary education may result in better physical health.

3.5 Leisure-time physical activity participation

A sequential logistic regression analysis assessed prediction of membership in one of two categories of outcome (high/low leisure activity group). The full model (Table 5) was statistically significant (χ^2 (11, N=268) = 48.255, $p < 0.001$), indicating that it could distinguish between these categories, with the Cox & Snell [27] R^2 value of .165 suggesting that it explained 16.5% of the variance in leisure-time PA.

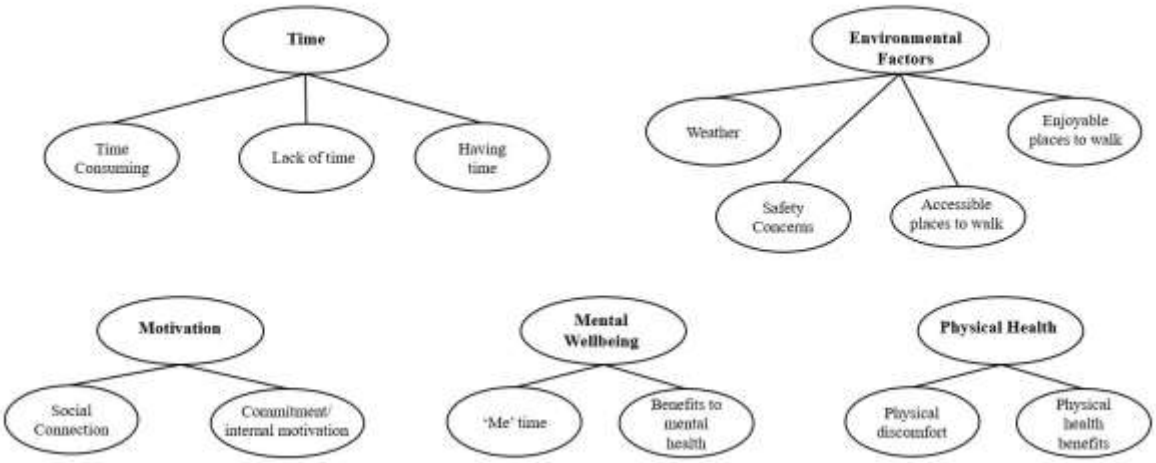
In step one of the model, demographic variables (age, educational status, BMI) explained relatively little variance (2.6%), with only age as a significant predictor. Adding health cognitions (health value and MHLC Internal, Chance and Powerful Others) in step 2 increased the explanatory power almost fourfold to account for 9.2% of the variance with three significant factors, Health Value, MHLC Powerful Others and age. Adding physical and mental health (SF-12 PCS and MCS; step 3) increased the variance accounted for to 15.8%, with four significant predictors: age, health value, MHLC Powerful Others and SF-12 MCS. Adding sedentary time (step 4) increased the variance explained slightly to 16.5%, with the same significant factors: higher age (p = 0.032), Heath Value (p = 0.017) and SF-12 MCS (p = 0.003) scores, and lower MHLC Powerful Others ($p < 0.001$) scores.

Overall, therefore, women are more likely to meet the PA threshold if they are older, value their health more, attribute their health less to the actions of powerful others, and report better mental health. However, the size of these effects is small, as the odds ratios indicate.

3.6 Attitudes to Walking

Thematic analysis of the open-ended questions eliciting advantages, disadvantages, barriers, and current/potential facilitators of walking identified five core themes (Figure 1): Time, Mental Wellbeing, Physical Health, Environmental Factors and Motivation. Exemplar quotes are presented in Table 6. Attitudes did not generally differ between activity groups except in relation to 'lack of time' and 'mental wellbeing'.

Figure 1: Major Themes and Subthemes



3.6.1 Time

Time was the most prominent theme - a big disadvantage is that walking takes time women cannot afford, and lack of time is consequently the greatest barrier. This seems a question of priority – for many, others' needs come first, and walking is almost an indulgence. Time was a current facilitator for some, through better time-management (e.g. lunchbreak walk), or temporarily delegating responsibilities. Those currently less active were more likely to see more time as a potential facilitator, framed either hypothetically, or in terms of children getting older.

3.6.2 Mental Wellbeing

The benefit to mental health was walking's greatest advantage, and an important current facilitator, particularly for those less active. Cited by many, '*fresh air*' seemed to encompass the other mental health benefits, affording participants '*me-time'*, and the opportunity to mentally unwind, enhance their wellbeing, and escape from indoors/their responsibilities.

3.6.3 Physical Health

Physical health benefits were another advantage/facilitator, although poor physical health forms a disadvantage/barrier for a smaller number.

3.6.4 Environmental Factors.

Exposure to poor Irish weather is a major disadvantage and barrier, with the inverse for good weather. Safety is a smaller but recurrent disadvantage/barrier - safe walking routes would significantly increase engagement for some. A further barrier is availability of places to walk with distance from amenities preventing running errands/commuting by foot. Conversely, experiencing natural environments was both advantage and facilitator, enhancing both enjoyment and mental health benefits for many. Others felt stimulating natural walking environments would increase their engagement.

3.6.5 Motivation.

Although many participants describe walking as enjoyable, few experience enjoyment as a current facilitator, instead citing willpower/commitment to routine. Lack of motivation is a significant barrier, with some feeling better internal motivation (‘*frame of mind’)* would increase their engagement.

Likewise, while social connection (linked to increased wellbeing and enjoyment) was generally seen as an advantage, current motivation is framed more in terms of responsibility to others. However, a walking buddy/group is the primary factor that might increase motivation, more for the social benefits than the commitment aspect.

4 Discussion

4.1 Key findings

This study adds to the limited research on key factors motivating PA and walking in midlife women and confirms the urgency of developing interventions for this population. Overall, results suggest that PA participation is linked to the quality of women’s motivation, which self-determination theory (SDT) [28] links to the basic psychological needs of competence, relatedness and autonomy, suggesting that believing their actions make a difference, experiencing meaningful connection with others, and feeling they can act freely makes women more likely to experience autonomous (‘want to’) rather than controlled (‘should’) motivation, increasing the likelihood of exercise participation [29]. Findings support this, identifying all three elements as key in this cohort.

Results suggest health cognitions are important - the higher PA group reported better physical/mental health, valuing health more, and greater perceived control over health, and the latter three variables predicted leisure activity group membership. Those with more internal HLOC also reported significantly lower sedentary time. Conversely, more external (powerful others/chance) HLOC was the greatest negative influence on physical health.

Consistent with Cobb-Clark et al. [10] and SDT, this suggests perceived control over health is important for encouraging PA, and that fostering internal HLOC may improve activity-related behaviour through increased motivation to take action. However, the small effect sizes and variance accounted for suggest successful interventions must also build on other factors underlying women’s participation.

This study examined factors influencing walking and identified lack of autonomy as a key factor. Reflecting the literature [14,15], the thematic analysis suggests that although

environmental factors including weather, safety and accessible routes impact participants, by far the most salient, and most urgent barrier to address, is women's perceived lack of time. This reflects existing research [12,17], where women's many responsibilities push exercise way down the priority list. This may explain why, unlike previous research [4], older women were more likely to be active – many felt children being older would free up time for walking, suggesting family responsibilities undermine women's autonomy for exercise. That the lower exercise group were more likely to feel having more time would increase engagement supports Segar et al.'s [17] assertion that this is a question of priority rather than absolute time available. This suggests attitudes to health will not, in themselves, motivate greater activity, but depend on PA being relevant enough to trump competing priorities. To address this, health professionals must provide a sound rationale for walking, which facilitates women's sense of autonomy and empowerment [29].

Reported advantages and facilitators suggest potential ways to achieve this. Reflecting the quantitative results, mental health was the strongest current facilitator, and the greatest benefit/motivator, especially for those less active, was time out to destress. As Miller & Brown [13] point out, such benefits are both immediate, and help women prioritize exercise by justifying time away from their other responsibilities - this type of self-care equips them to more effectively perform their other roles. Rather than time-based guidelines centred around physical health, health professionals should therefore promote a more holistic view of health emphasising self-care and promoting feelings of control and motivation for walking.

Past research identifies enjoyment as another key motivator[16], again aligning with SDT by highlighting connectedness with others [19]. Cobb-Clark et al. [10] link increased enjoyment of activity to internal HLOC, suggesting that making exercise more enjoyable might increase perceived control over health, helping to embed the habit. Connectedness with others was mentioned as a current facilitator mostly in terms of commitment, but many felt that a walking buddy/group would increase their engagement more for enjoyment than accountability. This suggests walking isn't currently perceived as an enjoyable means of social connection, perhaps because the demands of this life stage pose a challenge to scheduling walks.

Devising flexible ways for women to get out and connect with others may therefore foster enjoyment, increase women's autonomy and help them transition from 'should' to 'want to' motivation [16]. However, success depends on ensuring initiatives align with women's many responsibilities. Targeted walking group, walking-buddy and family-based initiatives are likely to be effective, especially as group walking addresses environmental barriers such as safety and finding suitable, attractive routes. Other possibilities to encourage connection might be, as one participant suggested, '*a park run idea, but for walkers*', a walking networks website to connect women, and workplace/commute-based walking groups. The benefits to mental health and women's ability to deal with their responsibilities are key factors to emphasize in encouraging participation.

4.2 Limitations and future research

While the relatively large sample size provides insight into facilitators/barriers to exercise in a broad cross-section of women, this study had several important limitations. Firstly, the self-reported data may have been subject to social desirability/recall bias.

Additionally, although online data collection permits wide reach, the sample reflected the fact that those of higher SES are more likely to participate [30]. As inactivity disproportionately affects those of lower SES, reaching this group remains an important consideration for future research.

4.3 Conclusions

This study confirms the urgency of supporting midlife women in increasing their activity levels and adds to the limited research identifying the factors health professionals should target. Findings suggest that health cognitions are important but must be tackled in the context of women's other barriers and facilitators. In relation to walking, practitioners should seek to increase women's 'want to' motivation by emphasizing the mental health benefits, and their important role in self-care, and working to increase women's enjoyment by facilitating flexible ways for them to get out and connect with others.

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Table 1
Participants' BMI category, leisure activity and sedentary time (N=295)[a]

Variables	% or M (SD)
BMI	25.41 (4.44)
BMI Category (%)	
Normal weight	55.3
Overweight	28.5
Obese	16.2
Leisure-time physical activity	
Minutes of leisure activity per day	35.35 (38.43)
Leisure activity group (%)	
High leisure activity[b]	41.9
Low leisure activity	58.1
Sedentary time	
Minutes spent sitting per day	324.88 (181.61)
Sedentary group(%)	
Low (< 3 hours/day)	18.2
Moderate (3-6 hours/day)	44.6
High (> 6 hours/day)	37.2

Note: [a]all participants provided data for all except for the following categories: Age: *n*=284; BMI: *n*=284; Leisure-time PA: *n*=291; Sedentary time: *n*=285. [b]As noted above, participants who achieved a weekly threshold of at least 30 mins moderate activity on at least 5 days, or at least 20 minutes vigorous activity on at least 3 days or 5 days of activity totalling 600 METs were classified in the high leisure activity group; all other participants fell into the low activity group.

Table 2
Mean differences in health cognitions between those with high and low levels of leisure activity

Variable	High leisure activity	Low leisure activity	p-value	Cohen's d
SF-12 PCS score	52.91 (SD, 7.23)	50.72 (SD, 8.22)	**0.016**	0.28
SF-12 MCS score	47.96 (SD, 9.64)	42.96 (SD, 11.17)	**<0.001**	0.48
Health Value score	22.62 (SD, 3.99)	21.23 (SD, 4.31)	**0.005**	0.33
MHLC Internal Score	26.25 (SD, 4.77)	25.27 (SD, 4.69)	0.082	0.21
MHLC Chance score	16.11 (SD, 5.18)	16.72 (SD, 5.08)	0.317	-0.1
MHLC Powerful Others Score	13.9 (SD, 4.35)	15.59 (SD, 4.48)	**0.002**	-0.38

Raw means for the health cognition measures are presented above for all participants (high, n=119; low, n=169). SF-12 PCS and MCS measure self-perceived physical and mental health, respectively, Heath Value measures the amount of value participants place on health, and the MHLC Internal, Chance and Powerful Others scores assess participants' beliefs on the degree to which they believe that their own choices, luck or powerful others (e.g. medical professionals, family members) influence health.

Table 3
Mean differences in health cognitions across levels of sitting time

Variable	Low	Moderate	High	P	eta squared
SF12 PCS score	52.97 (SD, 7.15)	51.48 (SD, 8,13)	50.89 (SD, 7.97)	0.300	.008
SF-12 MCS score	46.5 (SD, 10.18)	45.77 (SD, 10.4)	43.89 (SD, 10.9)	0.249	.0098
Health Value score	22.21 (SD, 4.39)	21.53 (SD, 4.15)	22.03 (SD, 4.27)	0.524	.0046
MHLC Internal Score	27.04 (SD, 4.04)	25.86 (SD, 4.82)	24.72 (SD, 4.75)	**0.011**	.0313
MHLC Chance score	15.19 (SD, 5.43)	17.1 (SD, 5.33)	16.38 (SD, 4.61)	0.074	.0183
MHLC Powerful Others Score	14.90 (SD, 4.25)	14.92 (SD, 4.64)	14.90 (SD, 4.44)	1.000	.0003

Raw means for the health cognition measures are presented above for all participants (Low (<3 hours.day; n=52), Moderate (3-6 hours/day; n=127); High (>6 hours/day; n=106).

Table 4
Hierarchical linear regression analysis of factors predicting physical health

Step	Predictor Variables	R^2	ΔR^2	P
1	Sociodemographics	.087	.087	**<0.001**
2	Health cognitions	.131	.044	**0.012**
3	Sedentary time	.139	.008	0.117
4	Physical activity	.146	.006	0.164

Note: Sociodemographic variables (age, educational status and BMI) were entered in the first step of the regression analysis, health cognitions (Health value, MHLC Internal, Chance and Powerful Others scores) in the second, sedentary time (total weekly minutes spent sitting) in the third, and physical activity (total minutes of weekly leisure activity) in the final step.

Table 5
Hierarchical Logistic Regression predicting likelihood of meeting leisure-time physical activity threshold

	B	S.E.	Wald	df	OR	95% C.I		p-value
Age	.057	.027	4.602	1	1.059	1.005	1.116	**0.032**
BMI	.039	.033	1.360	1	1.039	.974	1.109	0.243
Postgraduate	.097	.306	.100	1	1.101	.605	2.006	0.752
Post primary	-.082	.393	.043	1	.921	.426	1.991	0.835
Health Value Score	.081	.034	5.695	1	1.085	1.015	1.160	**0.017**
MHLC Internal score	.025	.033	.563	1	1.025	.960	1.095	0.453
MHLC Chance score	.016	.031	.258	1	1.016	.957	1.078	0.612
MHLC Powerful Others score	-.085	.033	6.567	1	.918	.860	.980	**0.010**
SF12 PCS score	.033	.020	2.871	1	1.035	.995	1.074	0.090
SF12 MCS score	.053	.014	13.521	1	1.054	1.025	1.084	**<0.001**
Sedentary time	.000	.000	2.221	1	1.000	1.000	1.000	0.136

Note: The coefficients for the education groups are contrasts with the undergraduate university education group. Significant Odds ratios are indicated in bold.

Table 6
Themes and subthemes with exemplar quotes for barriers and facilitators to walking

Theme	Subtheme		Example quotes
Time	Time-consuming	Disadvantage	• *'takes time (that I do not have)'*
	Lack of time	Barrier	• *'It is time, getting home from work at 6.30, sorting out kids and household duties, a walk can then slide down the list of priorities…'* • *'there's so much to get done in a day, who has time for a stroll?'*
	Having more time	Potential facilitator	• *'if I had another hour in the day!'* • *'my children are relatively small, so I will have to wait until they're older'*
Mental Wellbeing	Benefit to mental health	Advantage	• *'feeling wind in my face…stepping away from the day to day aspects of life…'* • *'fresh air is…great for your mental health'* • *'a kind of therapy'…'It allows me the time to process my day, think about what's on my mind, and have a little peace.'*
	'Me-time'	Current facilitator	• *'I just needed to get out, and had to park everything else, as I needed to do it for me…'*
Physical Health	Physical Benefits	Advantage/facilitator	• *'Walking makes me feel like I am doing something good for my body…'* • *'I love walking, because it gets my heart rate up which I feel is helping my heart, building strength and making me lose weight…'*
	Physical discomfort	Disadvantage/barrier	• *'Walking can tire one or maybe exacerbate problems of back/feet/legs'*
Environmental Factors	Bad weather	Disadvantage/barrier	• *'much harder to go out walking when it's lashing rain…'*
	Good weather	Facilitator	• *'The sunny weather helps me overcome many of the barriers above'*
	Safety	Barrier	• *'…I don't feel safe as a woman walking on my own in parks or rural locations.'* • *'traffic isn't always kind to walkers'.*
	Lack of accessible places to walk	Barrier	• *'I can't walk to many places as they are all too far away'* • *'Not practical to include walking in my commute'*
	Enjoyable natural places to walk	Current facilitator Potential facilitator	• *'being close to nature…reconnecting with the world'* • *'more park space to be out in the open air and in nature'* • *'nicer parks/mountain trails nearby'*
Motivation	Willpower	Current facilitator Potential facilitator Barrier	• *'Pushing yourself, thinking how much better you'd feel when you get back'* • *'Being better organised and determined…'* • *'I am my own greatest barrier…'*
	Social connection	Advantage	• '*Quality time with my family'* • *'Meet people, feel socially connected'*
		Current facilitator Potential facilitator	• *'Meeting others, didn't want to let them down.'* • *'company of other people and chat'* • *'accountability to someone else, or a group…'*